

Yw



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,597	01/09/2002	Peter Nangle	10559-516001	4716

20985 7590 03/11/2005

FISH & RICHARDSON, PC
 12390 EL CAMINO REAL
 SAN DIEGO, CA 92130-2081

EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
----------	--------------

2652

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/044,597	Applicant(s) NANGLE, PETER	
	Examiner Michael V Battaglia	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-20,22 and 23 is/are pending in the application.
 4a) Of the above claim(s) 6 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-17,19,20,22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 10, 12 and 23 are objected to because of the following informalities: On line 2 of claim 10, line 4 of claim 12, and line 3 of claim 23, replacing "the zone" with -the one or more zones- is suggested to avoid improper antecedent basis issues and the claims will be interpreted as such in the prior art rejections below. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-5, 7, 9-14, 16, 17, 19, 20, 22 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuribayashi et al (US 6,496,462).

It is noted that transition times between crystalline (erased/unrecorded) and amorphous (recorded) states in a phase change recording medium are asymmetric because a transition to the amorphous state is achieved by rapidly heating and rapidly cooling the phase change material and a transition back to the crystalline state is achieved by slowly heating and slowly cooling the phase change material (see Citation of Relevant Prior Art). Therefore, the claimed "first state having a longer transition time to achieve" reads on the crystalline state and the claimed "second state as

Art Unit: 2652

having a shorter transition time to achieve” reads on the amorphous state. It is also noted that transition time is required for transition between the at least two states of a phase change material.

In regard to claim 1, Kuribayashi discloses a method comprising: causing a device (Fig. 1) including a plurality of memory cells with asymmetric transition times between at least two states to be programmed by in a fast write mode, exclusively transitioning a plurality of said memory cells from a first state (crystalline state) having a longer transition time to achieve to a second state (amorphous state) having a shorter transition time to achieve, and in a normal write mode, overwriting a plurality of memory cells, said overwriting comprising transitioning a plurality of said memory cells in the first state to the second state and transitioning another plurality of said memory cells in the second state to the first state (Col. 3, lines 33-39; Col. 7, lines 61-67; and Col. 14, line 65-Col. 15, line 2). It is noted that the device of Kuribayashi is a phase change recording medium (Col. 8, lines 5-10) and as noted above, a phase change recording medium has asymmetric transition times.

In regard to claim 3, Kuribayashi discloses that each memory cell includes a phase change material (Col. 1, lines 8-9 and Col. 8, lines 1-9).

In regard to claim 4, Kuribayashi discloses that the phase change material comprises a chalcogenide alloy (Col. 10, lines 8-24 and Col. 1, lines 24-28).

In regard to claim 5, Kuribayashi discloses that said transitioning comprises heating each of said memory cells (Col. 1, lines 29-45).

In regard to claim 7, Kuribayashi discloses that said heating comprises directing an energy beam to a memory cell (Col. 1, lines 29-45).

In regard to claim 9, Kuribayashi discloses a method comprising: setting a plurality of memory cells in one of a plurality of zones of a memory device (Fig. 1 or 2) with asymmetric

Art Unit: 2652

transition times between at least two states to a first state (crystalline state) having a transition time to achieve (Col. 6, lines 23-26); and in a fast write mode, exclusively programming memory cells in the one or more zones by exclusively transitioning cells from the first state to a second state (amorphous state) having a shorter transition time to achieve; and in a normal write mode, overwriting a plurality of memory cells outside of said one or more zones, said overwriting comprising transitioning a plurality of said memory cells in the first state to the second state and transitioning another plurality of said memory cells in the second state to the first state (Col. 3, lines 33-39; Col. 7, lines 61-67; and Col. 14, line 65-Col. 15, line 2). It is noted that the device of Kuribayashi is a phase change recording medium (Col. 8, lines 5-10) and as noted above, a phase change recording medium has asymmetric transition times. It is further noted that the claimed "one of a plurality of zones of a memory device" reads on the zone of the memory device on which one of the record marks recorded by the fast write mode is recorded (hereafter "zone A") and the claimed "plurality of zones" reads on zone A and the zone of the memory device that does not include zone A (hereafter "zone B"). Zone A, along with zone B, is set to the first state during initialization (Col. 6, lines 23-26). Record marks including the record mark recorded in zone A are recorded by the fast write. Record marks in zone B, and possibly a record mark in zone A, are recorded when record marks are overwritten in the normal write mode.

In regard to claim 10, Kuribayashi discloses that the method further comprises receiving a command to set memory cells in the one or more zones to the first state; and setting said memory cells to the first state (Col. 6, lines 23-26).

In regard to claim 11, Kuribayashi discloses setting the memory cells to the first state after a first use of the device (Col. 7, lines 51-56 and 66-67 and Col. 14, lines 15-18).

In regard to claim 12, Kuribayashi discloses that the method further comprises receiving an indication that the memory device is preparing to initiate a data download (inherent to downloading data onto a memory); and setting said plurality of memory cells in the one or more zones to the first state (Col. 6, lines 23-26). It is noted that the claimed setting is not required to be dependent on the claimed indication reception.

In regard to claim 13, Kuribayashi discloses an apparatus comprising: a writer unit (Col. 9, line 10) operative to write data to a memory device (Fig. 1 or 2) having an asymmetric transition time between two memory states, wherein a transition from a first memory state (amorphous state) to a second memory state (crystalline state) takes longer than a transition from the second memory state to the first memory state; and a controller (inherent to control the writer unit to conduct recording (Col. 2, line 26)) operative to in a fast write mode, control the write unit to write exclusively to memory cells to be transitioned to the first memory state, and in a normal write mode, overwriting a plurality of memory cells, said overwriting comprising transitioning a plurality of said memory cells in the first state to the second state and transitioning another plurality of said memory cells in the second state to the first state (Col. 3, lines 33-39; Col. 7, lines 61-67; and Col. 14, line 65-Col. 15, line 2). It is noted that the memory device of Kuribayashi is a phase change recording medium (Col. 8, lines 5-10) and as noted above, a phase change recording medium has asymmetric transition times.

In regard to claim 14, Kuribayashi discloses that the apparatus comprises a non-volatile phase change memory device (Col. 10, lines 8-24 and Col. 1, lines 24-28). It is noted that the claimed “non-volatile phase change memory device” reads on the chalcogenide phase change memory device of Kuribayashi that has “relatively stable amorphous state” (Col. 1, line 28). It is further noted that a chalcogenide phase change memory device is non-volatile because data is

Art Unit: 2652

written through changes in the actual atomic configuration of the chalcogenide material (see Citation of Relevant Prior Art below).

In regard to claim 16, Kuribayashi discloses that the controller is operative to control the write unit to reset a plurality of memory cells in a zone to the second memory state (Col. 6, lines 23-26).

In regard to claim 17, Kuribayashi discloses that the controller is operative to control the write unit to write exclusively to memory cells in the zone (Col. 7, lines 61-67).

In regard to claim 19, Kuribayashi discloses that the write unit comprises an optical disc writer (Col. 9, line 10).

In regard to claim 20, Kuribayashi discloses an article comprising a machine-readable medium including machine-executable instructions (inherent for conducting recording (Col. 2, line 26)), the instructions operative to cause a machine (Col. 9, line 10) to: cause a device (Fig. 1 or 2) including a plurality of memory cells with asymmetric transition times between at least two states to be programmed by in a fast write mode, exclusively transitioning a plurality of said memory cells from a first state (crystalline state) having a longer transition time to achieve to a second state (amorphous state) having a shorter transition time to achieve, and in a normal write mode, overwriting a plurality of memory cells, said overwriting comprising transitioning a plurality of said memory cells in the first state to the second state and transitioning another plurality of said memory cells in the second state to the first state (Col. 3, lines 33-39; Col. 7, lines 61-67; and Col. 14, line 65-Col. 15, line 2). It is noted that the device of Kuribayashi is a phase change recording medium (Col. 8, lines 5-10) and as noted above, a phase change recording medium has asymmetric transition times.

In regard to claim 22, Kuribayashi discloses an article comprising a machine-readable medium including machine-executable instructions (inherent for conducting recording (Col. 2, line 26)), the instructions operative to cause a machine (Col. 9, line 10) to: set a plurality of memory cells in one of a plurality of zones of a memory device (Fig. 1 or 2) with asymmetric transition times between at least two states to a first state (crystalline state) having a transition time to achieve (Col. 6, lines 23-26); and in a fast write mode, exclusively program memory cells in the one or more zones by exclusively transitioning cells from the first state to a second state (amorphous state) having a shorter transition time to achieve; and in a normal write mode, overwriting a plurality of memory cells outside of said one or more zones, said overwriting comprising transitioning a plurality of said memory cells in the first state to the second state and transitioning another plurality of said memory cells in the second state to the first state (Col. 3, lines 33-39; Col. 7, lines 61-67; and Col. 14, line 65-Col. 15, line 2). It is noted that the device of Kuribayashi is a phase change recording medium (Col. 8, lines 5-10) and as noted above, a phase change recording medium has asymmetric transition times. It is further noted that the claimed "one of a plurality of zones of a memory device" reads on the zone of the memory device on which one of the record marks recorded by the fast write mode is recorded (hereafter "zone A") and the claimed "plurality of zones" reads on zone A and the zone of the memory device that does not include zone A (hereafter "zone B"). Zone A, along with zone B, is set to the first state during initialization (Col. 6, lines 23-26). Record marks including the record mark recorded in zone A are recorded by the fast write. Record marks in zone B, and possibly a record mark in zone A, are recorded when record marks are overwritten in the normal write mode.

Art Unit: 2652

In regard to claim 23, Kuribayashi discloses that the article further comprises instructions operative to cause the machine to receive a command to set memory cells in the one or more zones to the first state; and set said memory cells to the first state (Col. 6, lines 23-26).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuribayashi in view of Maeda et al (hereafter Maeda) (US 5,317,549).

Kuribayashi discloses the method of claim 1. In the method of Kuribayashi, the device is programmed in a fast write mode when the disc is unused (blank) (Col. 3, lines 32-37 and Col. 7, lines 61-67). Kuribayashi does not disclose that the method further comprises determining if the device has been written to; and setting an indicator to a used status in response to determining that the device has been written to.

Maeda discloses determining if a device (Fig. 2, element 1) has been written to (Fig. 1, element S6); and setting an indicator to a used status in response to determining that the device has been written to (Fig. 1, element S7 and Col. 10, lines 19-23). After the indicator is set, it becomes possible to promptly determine that a disc is blank (Col. 11, lines 8-10). It is noted that Maeda discloses employing a phase change type recording medium (Col. 11, lines 53-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate into the method of Kuribayashi determining if a device has been written to and setting an indicator to a used status in response to determining that the device has been written to as suggested by Maeda, the motivation being for the method of Kuribayashi to promptly determine that a disc is blank when determining if the fast write mode may be used to program the device.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuribayashi as applied to claim 13 in view of Kuroda et al (hereafter Kuroda) (US 5,818,807).

Kuribayashi discloses that the apparatus of claim 13 further comprises a reader unit (Col. 9, line 10). Kuribayashi further discloses that the controller is operative to control the write unit to write exclusively to memory cells to be transitioned to the first memory state when the use is a first use (Col. 7, lines 61-67 and Col. 14, line 65-Col. 15, line 2). Kuribayashi does not disclose that the reader unit is operative to determine if a use of the memory device is a first use and does not disclose that the controller controls the write unit to write in response to determining that the use is the first use.

Kuroda discloses a reader unit (Fig. 2, element 3) that is operative to determine if a use of the memory device is a first use (Fig. 3, element S5 and Col. 4, lines 53-56). Kuroda further discloses controlling a write unit (Fig. 2, element 3) to write in response to determining that the use is the first use (Fig. 3, elements S6 and S7 and Col. 4, lines 57-61). The writing in response to the determination that the use is a first use is carried out to set the strength of the laser beam to an optimized power (Col. 4, lines 61-64). It is noted that Kuroda discloses applying the invention to a phase change optical disc (Col. 6, lines 52-53).

Art Unit: 2652

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the reader unit of Kuribayashi operative to determine if a use of the apparatus is a first use as suggested by Kuroda and for the controller of Kuribayashi to control the write unit to write in response to determining that the use is the first use as suggested by Kuroda, the motivation being to set the strength of the laser beam to an optimized power.

Citation of Relevant Prior Art

5. Yagi et al (US 5,699,342) disclose that a phase change optical medium is rapidly heated and rapidly cooled to fix the medium in an amorphous state during recording and the medium is slowly heated and slowly cooled to resume a crystalline state during erasing (Col. 1, lines 38-45). Ovshinsky et al (US 5,335,219) disclose that a chalcogenide phase change memory device is a “truly non-volatile” information storage because information is stored through changes in the actual atomic configuration of the chalcogenide material (Col. 10, line 67-Col. 11, line 5).

Response to Arguments

6. Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2652

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

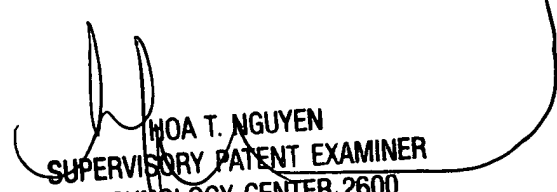
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Battaglia



HOA T. NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600
3/6/05